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PATTERSON & SHERIDAN, LLP
3040 POST OAK BOULEVARD, SUITE 1500
HOUSTON, TX 77056

EXAMINER	
CHAUDHRY, SAEED T	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/676,182
Filing Date: September 30, 2003
Appellant(s): VERHAVERBEKE, STEVEN

Mr. Keith M. Tackett
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 2, 2007 appealing from the Office action mailed November 14, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: Claims 43, from third rejection and claim 37 from fifth rejection and claim 36 has withdrawn from sixth rejection. A new rejection has been included.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

WO-02/10480	Ramachandran et al.	2-2002
6,630,074	Rath et al .	10-2003
EP-0918081	Rath et al.	5-1999

4,100,014	Kuhn-Kuhnenfeld et al.	7-1978
5,650,041	Gotoh et al.	7-1997
6,273,959	Oonishi et al.	8-2001

(8) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

I: Claims 1-2, 5, 9-12, 14, 20, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramachandran et al (WO-02/10480).

Ramachandran et al (WO-10480) disclose a method of removing residue from a substrate. The etchant solution of the instant invention would also be useful for cleaning of many

types of residue material. Residue materials include, but are not limited to oxygen, silicon, carbon and elements of an underlying conductive layer (see page 3, lines 11-14).

The present invention provides an etchant composition that is capable of removing via residue and does not adversely effect the aluminum lines or lines made of other conductive materials (See page 4, lines 16-19).

The etchant composition of the present invention is an aqueous solution containing about 0.01 to about 15 percent by weight of sulfuric acid, about 0.01 to about 20 percent by weight of hydrogen peroxide, or about 1 to about 30 ppm of ozone, and about 0.1 to about 100 ppm of hydrofluoric acid (see page 4, lines 23-27).

A preferred composition of the present invention is an aqueous solution of about 8 percent by weight of sulfuric acid, and about 1.5 percent by weight of hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35 degree C. Another more preferred composition of the present invention is an aqueous solution of about 9 percent by weight sulfuric acid and about 4 percent by weight hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35 degree C. and is especially preferred for removing thicker and more tenacious sidewall polymer. Yet another more preferred composition of the present invention is an aqueous solution of about 5% by weight of sulfuric acid, about 12% by weight of hydrogen peroxide and about 10 ppm hydrogen fluoride. The water employed is preferably deionized water (see page 5, lines 23 through page 6, line4).

The etchants of the present invention can be used to contact the substrate where the polymer or via residue is to be removed by any known technique, such as dipping in a bath or preferably spraying the composition on the substrate or silicon wafer having the aluminum copper lines thereon.

Typically, the composition is sprayed at a temperature of about 25 to about 95.degree. C. and preferably at a temperature of about 30 to about 50.degree. C. for about 1 to about 8 minutes, typical of which is about 2 minutes. Following this, the wafer can be subjected to a deionized water rinse followed by drying (see page 7, line 18-25). Since the rinsing step is performed after the using an aqueous solution. Therefore, the rinse solution is inherently kept separated from the aqueous solution. Further, claims 1 and 14 include a recitation "about 70% or less by weight" and "about 3° C or less", which reads as 0% percent and 0° C temperature difference. Therefore, it would have been obvious at the time appellant invented the claimed process to use cleaning composition as disclose by Ramachandran et al for removing residue from a surface of a substrate. Mixing hydrofluoric and sulfuric acid with hydrogen peroxide at different concentration before further diluting with water would have been obvious since it is known in the art to dilute the cleaning composition with water before cleaning a surface. Further the appellant has not shown any difference between composition starting with different concentration, which distinguished the claimed process from the cited art.

Furthermore, it would have been obvious to manipulate the higher concentration such as claimed 70% starting composition or 98% starting composition as disclosed by the cited reference to reach at the composition to be used for cleaning the substrate since it has been held obvious to discover the optimum or workable ranges by routine experimentation (see In *re Aller*

105 USPQ 233, 255 (CCPA 1955). Also, it would have been obvious at the time appellant invented the claimed process to reach at the claimed cleaning composition from more concentrated composition rather than less concentrated composition by adding less water rather than more water to dilute the concentrated composition to obtain the most satisfactory composition (see In *re Gibson* 5 USPQ 231, 232 (CCPA 1930).

II: Claims 1-2, 5, 9-12, 14, 20, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al.

. Rath et al (6,630,074) disclose a method for removing residue from a substrate. The etchant solution of the instant invention would also be useful for cleaning of many types of residue material. Residue materials include, but are not limited to oxygen, silicon, carbon and elements of an underlying conductive layer (see col. 2, lines 38-43).

The present invention provides an etchant composition that is capable of removing via residue and does not adversely effect the aluminum lines or lines made of other conductive materials (See col. 3, lines 1-4).

The etchant composition of the present invention is an aqueous solution containing about 0.01 to about 15 percent by weight of sulfuric acid, about 0.01 to about 20 percent by weight of hydrogen peroxide, or about 1 to about 30 ppm of ozone, and about 0.1 to about 100 ppm of hydrofluoric acid (see col. 3, lines 12-18).

A preferred composition of the present invention is an aqueous solution of about 8 percent by weight of sulfuric acid, and about 1.5 percent by weight of hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride

containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35.degree. C. Another more preferred composition of the present invention is an aqueous solution of about 9 percent by weight sulfuric acid and about 4 percent by weight hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35.degree. C. and is especially preferred

for removing thicker and more tenacious sidewall polymer. Yet another more preferred composition of the present invention is an aqueous solution of about 5% by weight of sulfuric acid, about 12% by weight of hydrogen peroxide and about 10 ppm hydrogen fluoride. The water employed is preferably deionized water (see col. 3, line 54 through col. 4, line 7).

The etchants of the present invention can be used to contact the substrate where the polymer or via residue is to be removed by any known technique, such as dipping in a bath or preferably spraying the composition on the substrate or silicon wafer having the aluminum copper lines thereon.

Typically, the composition is sprayed at a temperature of about 25 to about 95.degree. C. and preferably at a temperature of about 30 to about 50.degree. C. for about 1 to about 8 minutes, typical of which is about 2 minutes. Following this, the wafer can be subjected to a deionized water rinse followed by drying (see col. 5, lines 9-19). Since the rinsing step is performed after the using an aqueous solution. Therefore, the rinse solution is inherently kept separated from the aqueous solution.

Further, claims 1 and 14 include a recitation "about 70% or less by weight" and "about 3° C or less", which reads as 0% percent and 0° C temperature difference. Therefore, it would have been obvious at the time applicant invented the claimed process to use cleaning composition as disclose by Rath et al for removing residue from a surface of a substrate. Mixing hydrofluoric and sulfuric acid with hydrogen peroxide at different concentration before further diluting with water would have been obvious since it is known in the art to dilute the cleaning composition with water before cleaning a surface. Further the appellant has not shown any difference between composition starting with different concentration, which distinguished the claimed process from the cited art.

Furthermore, it would have been obvious to manipulate a higher concentration starting composition as disclosed by the cited reference or a lower starting composition as claimed herein to reach at the composition to be used for cleaning the substrate by using less water or more water for dilution, since it has been held obvious to discover the optimum or workable ranges by routine experimentation (see In *re Aller 105* USPQ 233, 255 (CCPA 1955). Also, it would have been obvious at the time appellant invented the claimed process to reach at the claimed cleaning composition from more concentrated composition rather than less concentrated composition by adding less water rather than more water to dilute the concentrated composition to obtain the most satisfactory composition, since the end result of the claimed composition is same as disclosed by the reference (see In *re Gibson* 5 USPQ 231, 232 (CCPA 1930).

III: Claims 1-2, 5, 9-12, 14, 20, 24-27, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al (EP-0918081).

Rath et al (EP-0918081) disclose a method for removing residue from a substrate. The etchant solution of the instant invention would also be useful for cleaning of many types of residue material. Residue materials include, but are not limited to oxygen, silicon, carbon and elements of an underlying conductive layer (see page 2, lines 48-50).

The present invention provides an etchant composition that is capable of removing via residue and does not adversely effect the aluminum lines or lines made of other conductive materials (See page 3, lines 6-7).

The etchant composition of the present invention is an aqueous solution containing about 0.01 to about 15 percent by weight of sulfuric acid, about 0.01 to about 20 percent by weight of hydrogen peroxide, or about 1 to about 30 ppm of ozone, and about 0.1 to about 100 ppm of hydrofluoric acid (see page 3, lines 11-13).

A preferred composition of the present invention is an aqueous solution of about 8 percent by weight of sulfuric acid, and about 1.5 percent by weight of hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35.degree. C. Another more preferred composition of the present invention is an aqueous solution of about 9 percent by weight sulfuric acid and about 4 percent by weight hydrogen peroxide and the remainder being substantially water, and more preferably contain about 10 ppm of a fluoride containing compound, preferably hydrofluoric acid. This composition is preferably employed at temperatures of about 35.degree. C. and is especially preferred for removing thicker and more tenacious sidewall polymer. Yet another more preferred composition of the present invention is an aqueous solution of about 5% by weight of

sulfuric acid, about 12% by weight of hydrogen peroxide and about 10 ppm hydrogen fluoride. The water employed is preferably deionized water (see page 3, lines 32-42).

The etchants of the present invention can be used to contact the substrate where the polymer or via residue is to be removed by any known technique, such as dipping in a bath or preferably spraying the composition on the substrate or silicon wafer having the aluminum copper lines thereon. Typically, the composition is sprayed at a temperature of about 25 to about 95.degree. C. and preferably at a temperature of about 30 to about 50.degree. C. for about 1 to about 8 minutes, typical of which is about 2 minutes. Following this, the wafer can be subjected to a deionized water rinse followed by drying (see page 4, lines 20-25). Since the rinsing step is performed after the using an aqueous solution. Therefore, the rinse solution is inherently kept separated from the aqueous solution. Further, the cleaning solution and rinsing water are not recycled. Therefore, the solutions are inherently discarded after use.

Further, claims 1 and 14 include a recitation "about 70% or less by weight" and "about 3° C or less", which reads as 0% percent and 0° C temperature difference. Therefore, it would have been obvious at the time applicant invented the claimed process to use cleaning composition as disclose by Rath et al for removing residue from a surface of a substrate. Mixing hydrofluoric and sulfuric acid with hydrogen peroxide at different concentration before further diluting with water would have been obvious since it is known in the art to dilute the cleaning composition with water before cleaning a surface. Further the appellant has not shown any difference between composition starting with different concentration, which distinguished the claimed process from the cited art.

Furthermore, it would have been obvious to manipulate a higher concentration starting composition as disclosed by the cited reference or a lower starting composition as claimed herein to reach at the composition to be used for cleaning the substrate by using less water or more water for dilution, since it has been held obvious to discover the optimum or workable ranges by routine experimentation (see In *re Aller 105* USPQ 233, 255 (CCPA 1955). Also, it would have been obvious at the time appellant invented the claimed process to reach at the claimed cleaning composition from more concentrated composition rather than less concentrated composition by adding less water rather than more water to dilute the concentrated composition to obtain the most satisfactory composition, since the end result of the claimed composition is same as disclosed by the reference (see In *re Gibson* 5 USPQ 231, 232 (CCPA 1930).

IV: Claims 1, 2, 5, 9-10, 14, 20, 24-25 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhn-Kuhnenfeld et al.

Kuhn-Kuhnenfeld et al (4,100,014) discloses a method of removing a residue from a substrate surface with an aqueous solution. According to the invention the aqueous solution is consisting of : (A) 1 TO 30, PREFERABLY 6 - 18% BY WEIGHT, OF HYDROFLUORIC ACID; (B) 2 TO 30, PREFERABLY 6 TO 20% BY WEIGHT, OF HYDROGEN PEROXIDE; (C) 1 TO 75, PREFERABLY 20 TO 55% BY WEIGHT, OF SULFURIC ACID; AND (D) 15 TO 95, PREFERABLY 30 TO 55% BY WEIGHT, OF WATER, Wherein the quantities of the individual components are so chosen that they will add up to a total of 100%.

The simplest manner to obtain the etching solutions is by the mixing of aqueous hydrofluoric acid and aqueous H_2O_2 of commercially-obtainable concentrations, and subsequent

slow stirring of concentrated aqueous sulfuric acid, that is of about 98% by weight, into the mixture (see col. 1, lines 36-53).

Another composition of etching agent, which is also very suitable, and which has the advantage compared to the above-described solution that it is stable during a period of several days, consists of one part by volume of 40% by weight of hydrofluoric acid, four parts by volume of 30% by weight of aqueous hydrogen peroxide, and one part by volume of concentrated aqueous sulfuric acid of about 98% by weight, the latter being slowly poured into the solution. Since this etching agent contains considerably less sulfuric acid, it has to be heated first to about 80.degree.-100.degree. C, e.g., in a water bath, before being applied to gallium phosphide discs. The sawn or lapped wafer is then preferably hung in a plastic holding device in the etching solution and taken out again after five to ten minutes, rinsed with water, and dried (see col. 2, lines 21-35).

It would have been obvious at the time appellant invented the claimed process to manipulate the percentage of the hydrogen fluoride concentration of Kuhn-Kuhnenfeld et al or time for treatment and temperature for better and efficient results (see In re Aller et al., 105 USPQ 233, 42 CCPA 824). Since the rinsing step is performed after the using an aqueous solution. Therefore, the rinse solution is inherently kept separated from the aqueous solution. Further, the cleaning solution and rinsing water are not recycled. Therefore, the solutions are inherently discarded after use. Further, one of ordinary skill in the art would manipulate the percentages and temperature for mixing the solution for better and efficient results. It would have been obvious at the time appellant invented the claimed process to use cleaning composition as disclose by Kuhn-Kuhnenfeld et al for removing residue from a surface of a substrate. Mixing

hydrofluoric and sulfuric acid with hydrogen peroxide at different concentration before further diluting with water would have been obvious since it is known in the art to dilute the cleaning composition with water before cleaning a surface. Further the appellant has not shown any difference between composition starting with different concentration, which distinguished the claimed process from the cited art.

Furthermore, it would have been obvious to manipulate a higher concentration starting composition as disclosed by the cited reference or a lower starting composition as claimed herein to reach at the composition to be used for cleaning the substrate by using less water or more water for dilution, since it has been held obvious to discover the optimum or workable ranges by routine experimentation (see In *re Aller 105* USPQ 233, 255 (CCPA 1955). Also, it would have been obvious at the time appellant invented the claimed process to reach at the claimed cleaning composition from more concentrated composition rather than less concentrated composition by adding less water rather than more water to dilute the concentrated composition to obtain the most satisfactory composition, since the end result of the claimed composition is same as disclosed by the reference (see In *re Gibson* 5 USPQ 231, 232 (CCPA 1930).

V: Claims 3-4, 17-19, 29-30, 34-35, 40, 42-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al or Ramachandran et al or Kuhn-Kuhnenfeld et al. in view of Gotoh et al.

Rath et al (U.S. patent 6, 630,074 or EP-0918081), Ramachandran (WO-02/10480) and Kuhn-Kuhnenfeld et al were discussed supra. However, the references fail to use surfactant in the cleaning solution.

Gotoh et al (5,650,041) disclose a method for removing residue from a substrate surface with a cleaning solution comprising hydrofluoric acid and surfactant. Wherein the surfactant is based on the glycol ether or ester and the concentration of the surfactant in the cleaning solution is 100 ppm (see col. 7, lines 7-11 and 51-57).

It would have been obvious at the time appellant invented the claimed process to incorporate a surfactant in the cleaning solution of Rath et al or Ramachandran et al or Kuhn-Kuhnenfeld et al since the surfactants are well known to reduce the surface tension and increase the wet ability of the substrate. Further, one of ordinary skill in the art would manipulate the percentages and temperature for mixing the solution for better and efficient results.

Furthermore, claim 29 include a limitation "about 70% or less by weight" and "about 3° C or less", which is read as 0% percent and 0° C temperature difference. Furthermore, producing the cleaning solution which has 1-15% hydrogen peroxide, 1-10% sulfuric acid, 10-1000 ppm hydrogen fluoride and a surfactant at 1,000 ppm is equivalent to any cleaning solution having the same percentages even though they are produced by any other processes such as mixing with different percentage products. The final product solution which is used for removing the residue would have not given any other or different results since the properties of the same percentage cleaning solution would not be changed by how the product is produced.

Claims having limitations 67% of sulfuric acid and 0.4% hydrogen peroxide and 0.1% of surfactant would have been obvious to manipulate the percentages with routine experimentation to produce final product, which is disclosed by the cited prior art and has been used for cleaning and removing residue form the surfaces.

VI: Claims 13 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al or Ramachandran et al in view of Oonishi et al.

Rath et al (U.S. patent 6, 630,074 or EP-0918081) and Ramachandran (WO-02/10480) were discussed supra. However, the references fail to use sonication.

Oonishi et al (6,273,959) disclose a method for cleaning semiconductor device by contacting the semiconductor with a cleaning solution containing 24 wt. % sulfuric acid, 5 wt % hydrogen peroxide, 0.02 wt % hydrogen fluoride, 0.075 wt % n-dodecyl-benzenesulfonic acid and water. The semiconductor is immersed into the cleaning solution for 10 minutes and thereafter semiconductor is subjected to overflow water rinsing for 7 minutes. While the semiconductor is simply immersed in the cleaning solution, other known techniques may be employed in combination with the immersion such as megasonic technique utilizing ultrasonic (see col. 4, lines 10-51 and col. 5, lines 60-65).

It would have been obvious at the time applicant invented the claimed process to incorporate the cited steps of sonication as disclosed by Oonishi et al into the process of Rath et al or Ramachandran et al or Kuhn-Kuhnenfeld et al to enhance the removal effect with the sonication.

NEW GROUND(S) OF REJECTION

Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al or Ramachandran et al in view of Gotoh et al as applied to claims 34 above, and further in view of in view of Oonishi et al.

Claim 36 depend on 35, which requires sonication. Therefore, new ground of rejection is required.

Rath et al (U.S. patent 6, 630,074 or EP-0918081) and Ramachandran (WO-02/10480) were discussed supra. However, the references fail to use sonication.

Oonishi et al (6,273,959) disclose a method for cleaning semiconductor device by contacting the semiconductor with a cleaning solution containing 24 wt. % sulfuric acid, 5 wt % hydrogen peroxide, 0.02 wt % hydrogen fluoride, 0.075 wt % n-dodecyl-benzenesulfonic acid and water. The semiconductor is immersed into the cleaning solution for 10 minutes and thereafter semiconductor is subjected to overflow water rinsing for 7 minutes. While the semiconductor is simply immersed in the cleaning solution, other known techniques may be employed in combination with the immersion such as megasonic technique utilizing ultrasonic (see col. 4, lines 10-51 and col. 5, lines 60-65).

It would have been obvious at the time appellant applicant invented the claimed process to incorporate the cited steps of sonication as disclosed by Oonishi et al into the process of Rath et al or Ramachandran et al or Kuhn-Kuhnenfeld et al to enhance the removal effect with the sonication.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al (EP-0918081).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al or Ramachandran et al or Kuhn-Kuhnenfeld et al. in view of Gotoh et al.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rath et al or Ramachandran et al in view of Oonishi et al.

(9) Response to Argument

The appellant argued that the examiner errs in asserting that the aqueous solution in the claims does not require sulfuric acid, as the claim language "an aqueous solution comprising sulfuric acid" illustrates the aqueous solution comprises an amount of sulfuric acid, i.e. more than 0% and the claim language "wherein a concentration of the sulfuric acid in the aqueous solution is about 70% or less by weight" further specifies that the amount of sulfuric acid in the solution is about 70% or less, i.e. not more than about 70%.

This argument is unpersuasive because the claimed language uses "70% or less", which reads on the 0%, since less than 70% includes 0%. No where in the claim it discloses that it is more than 0%.

The appellant argued that examiner has not identified any motivation for using an aqueous solution comprising sulfuric acid at the claimed concentration of 70% by weight or less to form an intermediate solution before further diluting the intermediated solution with water. While the instant specification describes an undesirable highly exothermic effect when a high concentration of sulfuric acid is used to form a cleaning solution.

This argument is not persuasive because it is well known in the art that high concentrated solution produce high exothermic reaction. One of ordinary skill in the art would manipulate the high concentrated solution by increasing the time reduce the amount for adding water to reduce the exothermic reaction.

The appellant argued that all the references do not teach, show or suggest a method for removing a residue from a surface, comprising mixing an aqueous solution comprising sulfuric acid, wherein a concentration of the sulfuric acid in the aqueous solution is about 70% or less by weight, with a hydrogen peroxide solution to produce an intermediate solution and the hydrogen peroxide solution, diluting the intermediate solution with water to form a cleaning solution.

These argument are not persuasive because the claimed cleaning composition are within the ranges disclosed by the references. Only the difference is in the claimed starting composition and one of ordinary skill in the art would have manipulated the higher concentrated starting composition by adding more water to dilute the concentrated composition rather than adding less water into the less concentrated composition to reach at the cleaning composition, since it is well known to dilute the concentrated composition to dilute with water at the point of use.

(10) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section **(8)** above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of

Respectfully submitted,

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (8) above by signing below:

GREGORY MILLS
QUALITY ASSURANCE SPECIALIST

Conferees:

Michael Barr

MICHAEL BARR
SUPERVISORY PATENT EXAMINER

Roy King

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

S. Chaudhry
July 3, 2007

rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (8) above by signing below:

MICHAEL BARR
SUPERVISORY PATENT EXAMINER

Conferees:

Michael Barr

Roy King

S. Chaudhry

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700